SUPPLEMENTAL MATERIAL

Competitive Inhibition of Thyroidal Uptake of Dietary Iodide by Perchlorate Does Not Describe Perturbations in Rat Serum Total T_4 and TSH

Eva D. McLanahan[1], Melvin E. Andersen[2], Jerry L. Campbell, Jr.[1*], Jeffrey W. Fisher[1**]

[1] University of Georgia, Department of Environmental Health Sciences, Athens, Georgia 30602

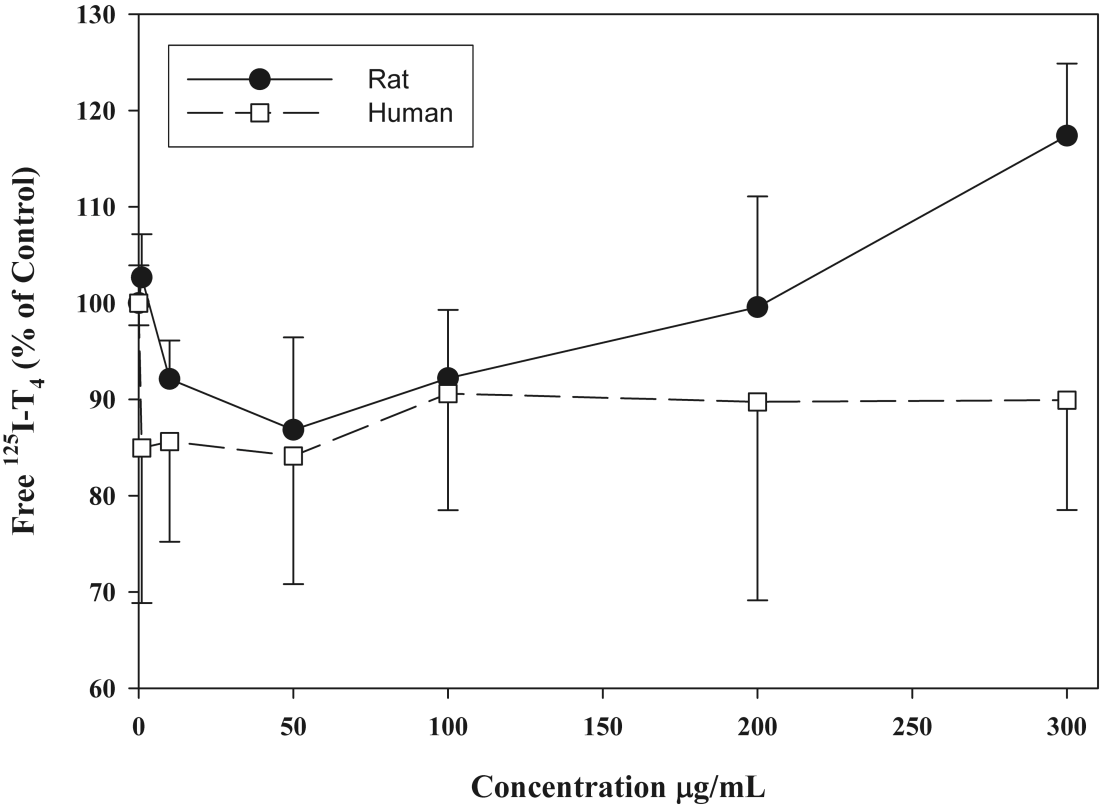
[2] The Hamner Institutes for Health Sciences, Division of Computational Biology, Research Triangle Park, North Carolina 27709

[*] Current address: The Hamner Institutes for Health Sciences, Division of Computational Biology, Research Triangle Park, North Carolina 27709

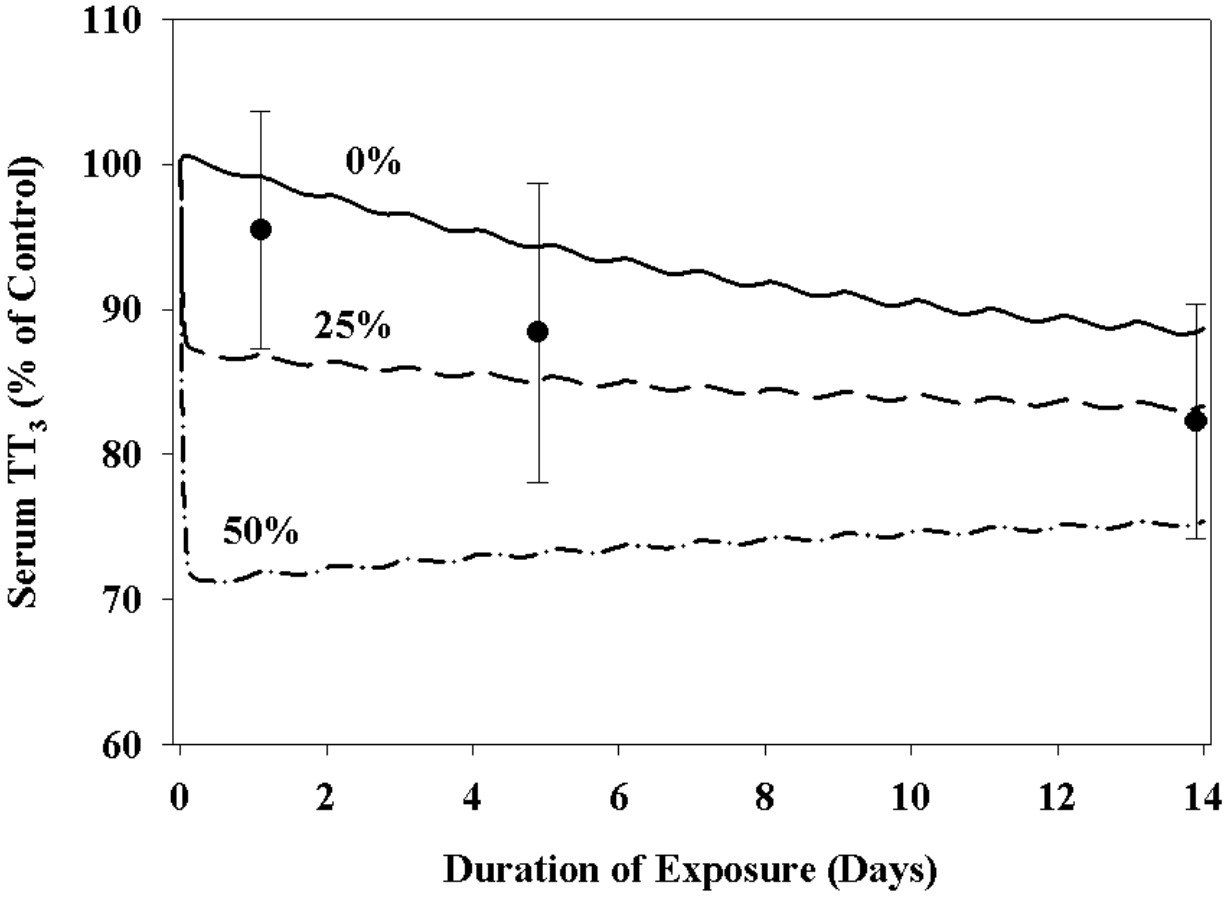
**Corresponding Author

Jeffrey W. Fisher, PhD
206 Environmental Health Sciences Department
University of Georgia
Athens, GA 30602-2102, USA
Phone: 706-542-1001
Fax: 706-542-7472
e-mail: jwfisher@uga.edu

Supplemental Material, Figure 1. Effects of perchlorate on free ^{125}I-T_4 in serum as determined by *in-vitro* equilibrium dialysis. Results are expressed as a percent of control +SE (rat serum) and –SE (human serum). N = 6 for the control measurement and N = 4 for the perchlorate concentrations.



Supplemental Material, Figure 2. Model predictions of serum TT_3 compared with data following exposure to 10 mg/kg perchlorate per day in drinking water. Model predictions are shown testing 0, 25, or 50% inhibition of thyroid hormone production. Data ± SD for 10 mg/kg-day from Yu et al. (2002).



Supplemental Material, Table 1. Model predicted serum T_4 and TSH concentrations as percent of control for a 300g adult rat compared to available literature data for 0-10 mg ClO_4^-/kg-day (Yu et al. 2002) and 15 mg ClO_4^-/kg-day (Männistö et al. 1979). This table corresponds to plots shown in Figure 5 of the manuscript, but is reported because of the difficulty in depicting failed model simulations at the low doses.

Dose of Perchlorate (mg/kg-day)	1 Day of Perchlorate Exposure				14 Days of Perchlorate Exposure			
	Serum T_4 (% Control)		Serum TSH (% Control)		Serum T_4 (% Control)		Serum TSH (% Control)	
	Predicted	Observed	Predicted	Observed	Predicted	Observed	Predicted	Observed
0	100	100 ± 10	100	100 ± 9	100	100 ±12	100	100 ± 8
0.1	100	94 ± 11	100	162 ± 15	100	97 ± 10	100	124 ± 12
1	99.9	89 ± 8	100.1	168 ± 17	99.8	96 ± 7	100.2	182 ± 19
3	99.8	88 ± 9	100.2	196 ± 19	99.0	86 ± 6	101.0	245 ± 25
10	98.0	76 ± 7	102.1	273 ± 21	82.8	84 ± 9	120.8	277 ± 30
15	94.2[a]	78.3 ± 6[a]	106.1[a]	118 ± 22[a]	73.4	Not reported	136.1	196 ± 13

[a] Data (Männistö et al. 1979) and model simulation following 2 days of exposure to 15 mg/kg-day.

REFERENCES

Männistö PT, Ranta T, Leppäluoto J. 1979. Effects of methylmercaptoimidazole (MMI), propylthiouracil (PTU), potassium perchlorate (KClO4) and potassium iodide (KI) on the serum concentrations of thyrotrophin (TSH) and thyroid hormones in the rat. Acta Endocrinol 91:271-281.

Yu KO, Narayanan L, Mattie DR, Godfrey RJ, Todd PN, Sterner TR, et al. 2002.The pharmacokinetics of perchlorate and its effect on the hypothalamus-pituitary-thyroid axis in the male rat. Toxicol Appl Pharmacol 182:148-159.